Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously presented) A method for processing video comprising video frames, comprising the steps of:

maintaining a budget of a number of processing cycles that are available at a transcoder processor to process video data;

maintaining an estimate of the number of processing cycles required by the processor to process the video data;

providing the video data to the processor;

wherein the processor operates in a plurality of transcoding modes; and

selecting one of the modes for processing each video frame according to a relationship between a number of budgeted processing cycles and an estimated number of required processing cycles.

2. (Original) The method of claim 1, wherein:

one of the modes is selected for each video frame.

3. (Original) The method of claim 1, wherein:

the estimated number of required processing cycles is updated after each video frame is processed.

4. (Original) The method of claim 1, wherein:

the number of budgeted processing cycles is updated after each video frame is processed.

5. (Original) The method of claim 1, wherein:

when a requantization mode is selected for one of an I and P video frame in a group of pictures (GOP) of the video data, the requantization mode is also selected for all subsequent P frames in the GOP.

6. (Original) The method of claim 1, wherein:

the number of budgeted processing cycles and the estimated number of required processing cycles are provided for remaining frames of a group of pictures (GOP) of the video data.

7. (Original) The method of claim 1, wherein:

the estimated number of required processing cycles associated with a current video frame is responsive to an actual number of processing cycles consumed for at least one previous video frame.

8. (Original) The method of claim 1, comprising the further step of:

storing the video frames in a buffer associated with the respective processor prior to processing the video frames; wherein:

the buffer comprises a smoothing buffer for accommodating variable processing times at the processor for the video frames in the different processing modes.

9. (Original) The method of claim 1, wherein:

the processor is a multi-processor device.

10. (Original) The method of claim 1, wherein:

the different modes have different computational intensities.

11. (Original) The method of claim 1, wherein:

a plurality of channels of video data are processed at the processor, and the number of budgeted processing cycles and the estimated number of required processing cycles are maintained separately for each channel.

12. (Original) The method of claim 11, comprising the further step of:

for each respective channel, determining if there is a processing cycle deficit associated with a current video frame of the respective channel based on a carried-over processing cycle deficit, if any, from a previous frame of the respective channel, and a difference between: (a) an actual number of processing cycles used for the previous video frame of the respective channel, and (b) the number of budgeted processing cycles for the current video frame of the respective channel.

13. (Original) The method of claim 12, wherein:

a requantization mode is selected, with dropping of higher-frequency discrete cosine transform (DCT) coefficients of the current video frame of a respective channel, when it is determined that an overall processing cycle deficit exceeds a predetermined level.

14. (Previously presented) The method of claim 1, wherein:

the transcoding modes include a full transcoding mode, a requantization mode, and a bypass mode.

15. (Original) The method of claim 14, wherein:

in the full transcoding mode, motion compensation processing of the video data in a pixel domain is performed.

16. (Original) The method of claim 14, wherein:

in the requantization mode, the video data is requantized in a frequency transform domain without performing motion compensation processing.

17. (Original) The method of claim 14, wherein:

in the bypass mode, the video data bypasses motion compensation processing and requantization.

18. (Original) The method of claim 14, comprising the further step of:

determining if there is processing cycle deficit associated with a current video frame based on a carried-over processing cycle deficit, if any, from a previous frame, and a difference between: (a) an actual number of processing cycles used for the previous video frame, and (b) the number of budgeted processing cycles for the current video frame.

19. (Currently amended) The method of claim 18, wherein:

one of the requantization mode and the bypass mode is selected ~~fir~~ for the current video frame when it is determined that there is a processing cycle deficit associated therewith.

20. (Original) The method of claim 18, wherein:

the processing cycle deficit is used in determining the estimated number of required processing cycles.

21. (Original) The method of claim 18, wherein:

the processing cycle deficit is associated with remaining frames of a group of pictures (GOP) of the video data.

22. (Original) The method of claim 18, wherein:

the selected mode for the current video frame is based on whether the processing cycle deficit associated therewith exceeds a predetermined level.

23. (Original) The method of claim 18, wherein:

one of the requantization mode and the bypass mode is selected for the current video frame when it is determined that the processing cycle deficit associated therewith exceeds a predetermined level.

24. (Original) The method of claim 18, wherein:

when the requantization mode is selected, and when it is determined that the processing cycle deficit associated therewith exceeds a predetermined level, higher-frequency discrete cosine transform (DCT) coefficients are dropped in the current video frame.

25. (Original) The method of claim 24, wherein:

the predetermined level is a function of an expected fullness level of a buffer associated with the processor in which the video frames are stored prior to processing.

26. (Original) The method of claim 24, wherein:

different levels of coefficient dropping are used according to a picture type of the current video frame.

27. (Previously presented) An apparatus for processing video data comprising video frames, comprising:

means for maintaining a budget of a number of processing cycles that are available at a transcoder processor to process the data;

means for maintaining an estimate of the number of processing cycles required by the processor to process the video data;

means for providing the video data to the processor;

wherein the processor operates in a plurality of transcoding modes; and

means for selecting one of the transcoding modes for processing each video frame according to a relationship between a number of budgeted processing cycles and an estimated number of required processing cycles.

28. (Currently amended) A method for processing video comprising video frames, comprising:

maintaining ~~an estimate~~ a budget of a number of processing cycles that are available at a processor to process video data;

maintaining an estimate of the number of processing cycles required by the processor to process the video data;

providing the video data to the processor;

processing a plurality of channels of video data at the processor;

maintaining a number of budgeted processing cycles and an estimated number of required processing cycles separately for each channel;

determining for each respective channel if there is a processing cycle deficit associated with a current video frame of ~~each~~ the respective channel based on a carried-over processing cycle deficit from a previous video frame, if any, of ~~each~~ the respective channel~~; determining~~ and a difference between (a) an actual number of processing cycles used for the previous video frame of the respective channel, and (b) the number of budgeted processing cycles for the current video frame of the respective channel;

wherein the processor operates in a plurality of modes;

selecting one of the modes for processing each video frame according to a relationship between the number of budgeted processing cycles and the estimated number of required processing cycles; and

selecting a requantization mode, wherein ~~and dropping~~ higher-frequency discrete cosine transform (DCT) coefficients of the current video frame of ~~each~~ a respective channel are dropped ~~responsive to~~ when it is determined that an overall processing cycle deficit exceeds ~~exceeding~~ a predetermined level.

29. (Currently amended) A method for processing video comprising video frames, comprising:

maintaining ~~an estimate~~ a budget of a number of processing cycles that are available at a processor to process video data;

maintaining an estimate of the number of processing cycles required by the processor to process the video data;

providing the video data to the processor;

wherein the processor operates in a plurality of modes, said plurality of modes comprising a full transcoding mode, a requantization mode and a bypass mode;

determining if there is a processing cycle deficit associated with a current video frame based on a carried-over processing cycle deficit, if any, from a previous frame~~; determining~~ and a difference between (a) an actual number of processing cycles used for the previous video frame, and (b) a number of budgeted processing cycles for the current video frame; and

selecting one of the modes for processing each video frame according to a relationship between the number of budgeted processing cycles and the estimated number of required processing cycles;

wherein one of the requantization mode and the bypass mode is selected for a current video frame responsive to a determination that there is a processing cycle deficit associated therewith.

30. (Currently amended) A method for processing video comprising video frames, comprising:

maintaining ~~an estimate~~ a budget of a number of processing cycles that are available at a processor to process video data;

maintaining an estimate of the number of processing cycles required by the processor to process the video data;

providing the video data to the processor;

wherein the processor operates in a plurality of modes, said plurality of modes comprising a full transcoding mode, a requantization mode and a bypass mode;

determining if there is a processing cycle deficit associated with a current video frame based on a carried-over processing cycle deficit, if any, from a previous frame~~; determining~~ and a difference between (a) an actual number of processing cycles used for a previous video frame, and (b) a number of budgeted processing cycles for the current video frame; and

selecting one of the modes for processing each video frame according to a relationship between the number of budgeted processing cycles and the estimated number of required processing cycles;

wherein one of the requantization mode and the bypass mode is selected for the current video frame responsive to a determination that the processing cycle deficit associated therewith exceeds a predetermined level.

31. (Currently amended) A method for processing video comprising video frames, comprising:

maintaining ~~an estimate~~ a budget of a number of processing cycles that are available at a processor to process video data;

maintaining an estimate of the number of processing cycles required by the processor to process the video data;

providing the video data to the processor;

wherein the processor operates in a plurality of modes, said plurality of modes comprising a full transcoding mode, a requantization mode and a bypass mode;

determining if there is processing cycle deficit associated with a current video frame based on a carried-over processing cycle deficit, if any, from a previous video frame~~;~~ and ~~determining~~ a difference between (a) an actual number of processing cycles used for the previous video frame, and (b) a number of budgeted processing cycles for the current video frame; and

selecting one of the modes for processing each video frame according to a relationship between the number of budgeted processing cycles and the estimated number of required processing cycles;

wherein when the requantization mode is selected, and when it is determined that the processing cycle deficit associated therewith exceeds a predetermined level, higher-frequency discrete cosine transform (DCT) coefficients are dropped in the current video frame.

32. (Previously presented) The method of claim 31, wherein:

the predetermined level is a function of an expected fullness level of a buffer associated with the processor in which the video frames are stored prior to processing.

33. (Previously presented) The method of claim 31, wherein:

different levels of coefficient dropping are used according to a picture type of the current video frame.